## Polynomial Operations EXAM (version 107)

1. Let polynomials p(x) and q(x) be defined below.

$$p(x) = -2x^5 - 3x^4 + 6x^3 + 10x^2 + 5$$

$$q(x) = -3x^5 - 10x^4 - 9x^3 + 7x - 6$$

Express the sum of p(x) + q(x) in standard form.

2. Let polynomials a(x) and b(x) be defined below.

$$a(x) = 6x^2 - 7x + 4$$

$$b(x) = -5x - 9$$

Express the product  $a(x) \cdot b(x)$  in standard form.

3. Express  $(x+1)^5$  in standard (expanded) form.

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4. Let polynomials f(x) and g(x) be defined below.

$$f(x) = 4x^3 - 26x^2 + 13x + 4$$

The quotient of  $\frac{f(x)}{g(x)}$  can be expressed as a polynomial, h(x), and a remainder, R (a real number).

$$\frac{f(x)}{g(x)} = h(x) + \frac{R}{x - 6}$$

By using synthetic division or long division, express h(x) in standard form, and find the remainder R.

5. Let polynomial f(x) still be defined as  $f(x) = 4x^3 - 26x^2 + 13x + 4$ . Evaluate f(6).